

forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route;

receiving response signals from the nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node; and

associating each packet of data to be transferred from a particular source node to a particular destination node with one of the plurality of paths between the ingress node and the egress node;

wherein the subnetwork comprises a label-switching network.

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Cancel claim 2.

3. (Amended) The method of claim 1 wherein the network comprises nodes which forward data using Internet protocol node addresses.

4. (Amended) The method of claim 1 wherein each subnetwork node along the route allocates a plurality of labels for the plurality of paths along the route.

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5. (Amended) A method of forwarding data over a network from a source node to a destination node, comprising:

providing a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node;

forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route; and

receiving response signals from the nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;

characterized in that the ingress node is coupled to a plurality of source nodes and each source node coupled to the ingress node is associated with one of the plurality of paths along the route between the ingress node and the egress node, and further characterized in that the subnetwork comprises a label-switching network.

6. (Amended) A method of forwarding data over a network from a source node to a destination node, comprising:

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providing a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node;

forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route; and receiving response signals from the nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;

characterized in that the egress node is coupled to a plurality of destination nodes and each destination node coupled to the egress node is associated with one of the plurality of paths along the route between the ingress node and the egress node, and further characterized in that the subnetwork comprises a label-switching network.

Cancel claim 7.

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8. (Amended) The method of claim 1 wherein the associating comprises performing a logical operation on information carried in each packet of data.

9. The method of claim 8 wherein the logical operation comprises a hash operation.
10. The method of claim 8 wherein the logical operation is performed on an address field in the packet of data.
11. The method of claim 8 wherein the logical operation is performed on a protocol field in the packet of data.
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12. (Amended) A method of forwarding data over a network from a source node to a destination node, comprising:
- providing a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node;
- forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route; and
- receiving response signals from the nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;
- characterized in that a response signal includes a label word which defines a plurality of data bits, a first subset of the defined data bits being associated with the route between the ingress node and the egress node and a second subset of the defined data bits being associated with the plurality of paths within the route, and further characterized in that the subnetwork comprises a label-switching network.
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13. The method of claim 12 wherein the data bits of the second subset of the defined data bits are not assigned values by the node that generated the response signal.

14. The method of claim 12 wherein the number n of data bits in the second subset of the defined data bits determines the number N of defined paths within the route.

15. The method of claim 14 wherein  $N=2^n$

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16. (Amended) A method of forwarding data over a network from a source node to a destination node, comprising:

providing a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node;

forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route; and

receiving response signals from the nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;

characterized in that the ingress node is coupled to a plurality of source nodes and each source node coupled to the ingress node is associated with one of the plurality of paths along the route between the ingress node and the egress node.

17. (Amended) A method of forwarding data over a network from a source node to a destination node, comprising:

providing a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node;

forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route; and

receiving response signals from the nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;

characterized in that the egress node is coupled to a plurality of destination nodes and each destination node coupled to the egress node is associated with one of the plurality of paths along the route between the ingress node and the egress node.

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Cancel claim 18.

Cancel claim 19.

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20. (Amended) An apparatus for forwarding data over a network from a source node to a destination node, comprising:

a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node; and

*A6*  
a communication subsystem within the subnetwork for (i) forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route, and (ii) forwarding response signals from the subnetwork nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;

characterized in that the ingress node is coupled to a plurality of source nodes; and each source node coupled to the ingress node is associated with one of the plurality

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of paths along the route between the ingress node and the egress node, and further characterized in that the subnetwork comprises a label-switching network.

Cancel claim 21.

22. (Amended) The apparatus of claim 20 wherein the network comprises nodes which forward data using Internet protocol node addresses.

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23. (Amended) The apparatus of claim 20 wherein each subnetwork node along the route allocates a plurality of labels for the plurality of paths along the route.

Cancel claim 24.

25. (Amended) An apparatus for forwarding data over a network from a source node to a destination node, comprising:

a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node; and

a communication subsystem within the subnetwork for (i) forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route, and (ii) forwarding response signals from the subnetwork nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node;

characterized in that the egress node is coupled to a plurality of destination nodes and further characterized in that each destination node coupled to the egress node is

associated with one of the plurality of paths along the route between the ingress node and the egress node.

26. (Amended) An apparatus for forwarding data over a network from a source node to a destination node, comprising:

a subnetwork within the network having a plurality of subnetwork nodes connected by a plurality of subnetwork links, the subnetwork nodes including an ingress node and an egress node coupled to the source node and the destination node, respectively, at least one pair of subnetwork nodes being connected by a plurality of subnetwork links, the plurality of subnetwork nodes and the plurality of subnetwork links defining a plurality of subnetwork paths between the ingress node and the egress node; and

a communication subsystem within the subnetwork for (i) forwarding a signal from the ingress node to the egress node along a route through a subset of subnetwork nodes between the ingress node and the egress node, said signal requesting a response from each node along the route, and (ii) forwarding response signals from the subnetwork nodes along the route, the response signals defining a plurality of paths within the route between the ingress node and the egress node

characterized in that a response signal includes a label word which defines a plurality of data bits, a first subset of the defined data bits being associated with the route between the ingress node and the egress node and a second subset of the defined data bits being associated with the plurality of paths within the route, and further characterized in that the subnetwork comprises a label-switching network.

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27. The apparatus of claim 26 wherein the data bits of the second subset of the defined data bits are not assigned values by the node that generated the response signal.

28. The apparatus of claim 26 wherein the number  $n$  of data bits in the second subset of the defined data bits determines the number  $N$  of defined paths within the route.

Cancel claim 29.

Cancel claim 30.